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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,843

12/04/2006

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6058

26021 7590 07/17/2008  
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EXAMINER

BUDD, MARK OSBORNE

ART UNIT

PAPER NUMBER

2834

MAIL DATE

DELIVERY MODE

07/17/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,843	<b>Applicant(s)</b> TERAZONO ET AL.	
	<b>Examiner</b> Mark Budd	<b>Art Unit</b> 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 32-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 32-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4-27-06</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 32-40, 42, 44, 45, 52, 54, 55, 58-63 and 65 are rejected under 35 USC 102

(b) has been anticipated by Omatsu. In figures 1 and 2, Omatsu teaches a stack of piezoelectric elements #1, with internally electrodes #2 preferably made of a mixture of silver (group 1b metal) and palladium (group viii metal) combined with the same PZT ceramic used for the piezoelectric layers (see column for, lines 1-20) pillars of ceramic material #2a pierce the electrodes. It is noted that the "wherein a ratio...." clauses are merely statements of desired function with no commensurate structure claimed to enable such function to be performed. Consequently, these phrases have not been given patentable consideration.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 41, 43, 53, 56 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omatsu. Omatsu, as described above, teaches the basic multilayered piezoelectric element. Omatsu does not explicitly teach the specific distribution of the pillars or the specific proportions and selections of the group VIII and

group Ib metal electrode materials. However, it has long been held that optimization of a known structure for a particular application is within the skill expected of the routineer. Thus, a routine experimentation to arrive at optimum values for the pillar distribution and metal content of the electrodes would have been obvious to one of ordinary skill in the art.

Claims 46-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omatsu in view of Japan (540). Omatsu, as described above, teaches the basic laminated piezoelectric structure but does not explicitly provide protection on the ends of the stacks made up of alternating layers of inactive piezoelectric elements and dummy electrodes. However, Japan (940) clearly teaches providing such a structure in order to prevent cracking of the piezoelectric actuator block. Thus, for at least this known reason, it would have been obvious to one of ordinary skill in the art to provide this protection on the ends of the piezoelectric stack taught by Omatsu.

Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omatsu in view of Issartel. As described above, Omatsu teaches the basic structure of the piezoelectric laminate. Omatsu does not explicitly show providing a groove filled with insulating material to prevent short-circuiting of the internally electrodes to the outside lead electrodes. Omatsu, instead, provides insulation on the outer surface of the stack. Issartel teaches other methods of preventing short-circuiting of the internal electrodes by the outside lead electrodes by preventing the interelectrode among any known

reaching the outside surface with either a filler material (figure 1, figure 4) or by allowing the piezoelectric ceramic composition to occupy the space (figures 5 and 6). Since an operable device can only be obtained by preventing short-circuiting of the internal electrodes with the exterior leads, one of ordinary skill in the art would select from among any known structure/method of providing this necessary protection when designing stack architecture. Thus, it would have been obvious to one of ordinary skill in the art to provide a groove filled with insulation in order to prevent short-circuiting of the internally electrodes of Omatsu as taught by Issartel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Budd whose telephone number is 571-272-2019. The examiner can normally be reached on Monday-Thursday from 6 a.m. to 4 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg, can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit: 2834

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Mark Budd  
Primary Examiner  
Art Unit 2834

/Mark Budd/  
Primary Examiner, Art Unit 2834